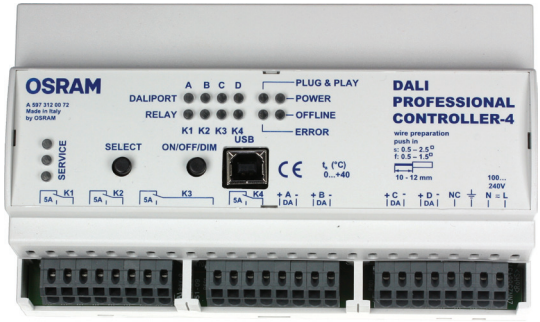
DALI Professional Controller-4

Control unit
Operating instructions



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Safety

General instructions

The control unit must only be installed and put into operation by a qualified electrician.

The applicable safety regulations and accident prevention regulations must be observed.

Safety instructions

WARNING!

Exposed, live cables.

Danger of electric shock!

- Only work on the control unit when it is de-energised.

CAUTION!

Destruction of the control unit and other devices through incorrect mounting!

- The control unit should only be mounted in switch cabinets (DIN 43880).
- The DALI standard as per IEC 62386 must be complied with.

Description

Purpose and application

The DALI Professional control unit makes scene-based operations and daylight/presence-dependent operations possible.

The control unit can control up to 256 (4x64) DALI-operating devices via 4 DALI lines and functions with any other device of the DALI Professional product family. For more detailed information on DALI, see http://www.dali-ag.org/.

The gateway is designed for installation on 35 mm DIN rails in switch cabinets.

Configuration

In order to make use of the control unit‘s full functionality (e.g. brightness control, scenes, sequences, colour control, addressing), you must have a PC configured with the DALI Professional software (see the separate software instructions).

Simple light operations (switching on/off, dimming) can be carried out without previous configuration (see „Operation“ in these operating instructions):

- With the pushbuttons directly on the device („Construction Site mode“)
- With the buttons directly on the device and the motion sensors („Plug & Play Mode“)

Design

The control unit is made up of the following components:

Connections

- Power supply (A)
- DALI lines (two-pole) A, B, C, D (B)
- Relay contacts K1, K2, K3, K4 (C)
- USB interface (type B) for PC connection (J)

Pushbutton

- “SELECT” pushbutton (E)
- „ON/OFF/DIM“ pushbutton (F)

LED displays

„DALIPORT“ (G): Status of the DALI A, B, C, D lines:

LED	Meaning
On	Mains voltage present, DALI power supply active.
Off	No mains voltage present, DALI power supply inactive (control unit supplied only through USB).
Flashes	Short circuit within the DALI circuit (voltage 0 V).
Sparks	Overvoltage in the DALI circuit (voltage > 20 V).

„RELAY“ (H): Status of the relay outputs K1, K2, K3, K4

LED	Meaning
On	Relay energised.
Off	Relay de-energised (switching state as on imprint).
Flashes	See "Construction Site Mode" in "Operation".

LEDs for status display of the control unit (K)

„PLUG & PLAY“:

LED	Meaning
On	Plug & Play mode available (i.e. control unit has not yet been configured by means of PC).
Off	Plug & Play mode not available (i.e. control unit has been configured by means of PC).

„POWER“:

LED	Meaning
On	Mains voltage is present. Control unit is operational.
Off	No mains voltage present.
Flashes	Startup phase (approx. 10 s) after a power failure.

„OFFLINE“

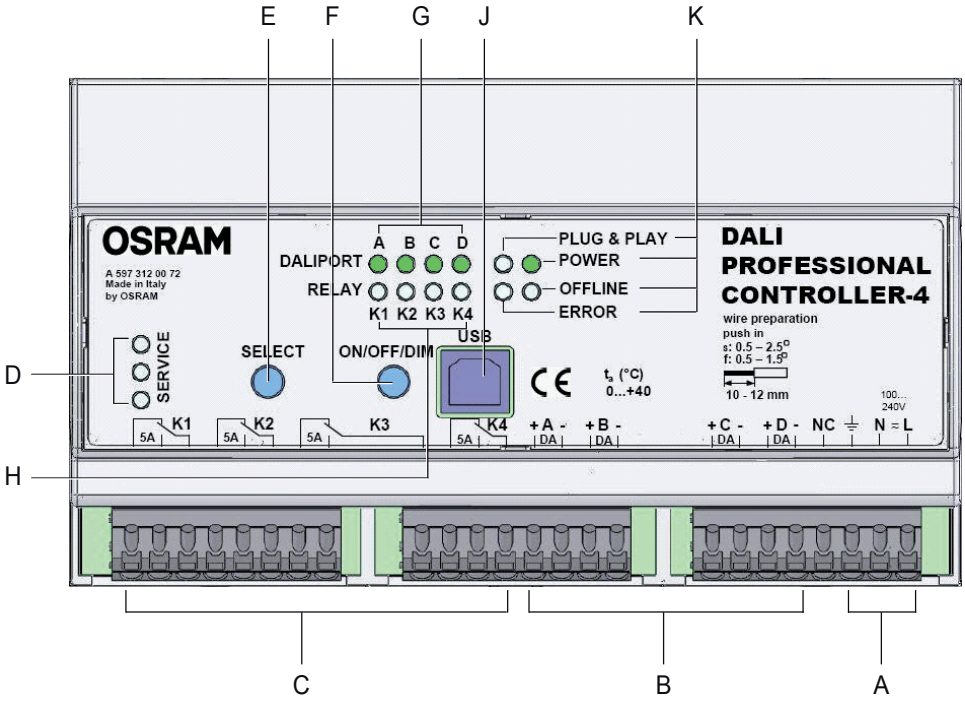
LED	Meaning
On	No mains voltage present. The control unit is not supplied with mains voltage, but instead via the USB interface. "Offline mode (power supply via the USB interface)".

„ERROR“

LED	Meaning
On	Lamp faults detected.
Off	Normal operation.

„SERVICE“: (D)

LED	Meaning
On/Off	Reserved for future applications

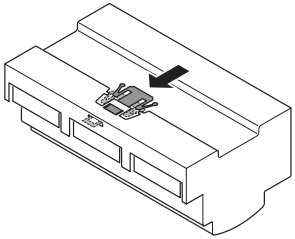
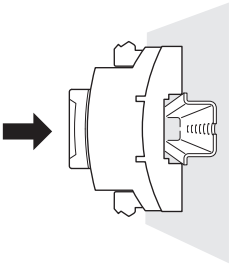
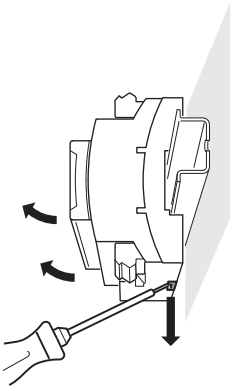


Installation

Fasten control unit

The DALI Professional control unit is only intended to be mounted on 35 mm DIN rails in a switch cabinet, as per DIN 43880. It requires an installation width of 9 horizontal pitch units (HP).

Proceed as follows:

Step	Task
1	Press in lock clips until you hear them lock with a "click" sound. 
2	Lock in the control unit on the DIN rail. 
	Removal: Using a screwdriver, push out the lock clips. 

Connecting the control unit

Safety instructions

WARNING!

Protection Class I device.

Danger of electric shock!

- Securely connect the protective earth (PE).
- Use B 10 A or B 16 A type unit as circuit breaker.

WARNING!

The DALI interface is insulated by a basic insulation.

Danger of electric shock!

- Use wires that can handle power line voltages for the entire DALI wiring.
- Include DALI wiring, with a 5-core cable (e.g. NYM 5 x 1.5 mm²) if necessary, together with the mains voltage (L, N, PE).
- Do not connect the DALI wiring with external voltage, especially not with 230 V mains voltage. Any potential overvoltage is only checked when starting up the DALI Professional.

CAUTION!

Destruction of the control unit and other devices through incorrect mounting!

- Connect relay contacts with max. 5 A ohmic load.
- Connect an interference suppressed contactor in between for higher loads.
- Using electronic ballast reduces the switching load, with respect to ohmic loads, at the same wattage.

Preparing the wiring

Wire stripping for connecting the relays, DALI and mains cables to the plug-in terminals: 10-12 mm.

Relays

Depending on the connection, the relays function as break contact, make contact or make/break contact:

Relays	Connection to K1, K2, K3, K4
Break contact	
Make contact	
Make/break contact	

Number of pushbuttons and sensor couplers

If a 64 EVG is connected to a DALI circuit, the maximum drive current available in this DALI circuit is 70 mA.

Specific power consumption of the couplers:

- DALI Professional sensor coupler: 5 mA
- DALI Professional pushbutton coupler: 6 mA

→ Connection examples of a DALI circuit:

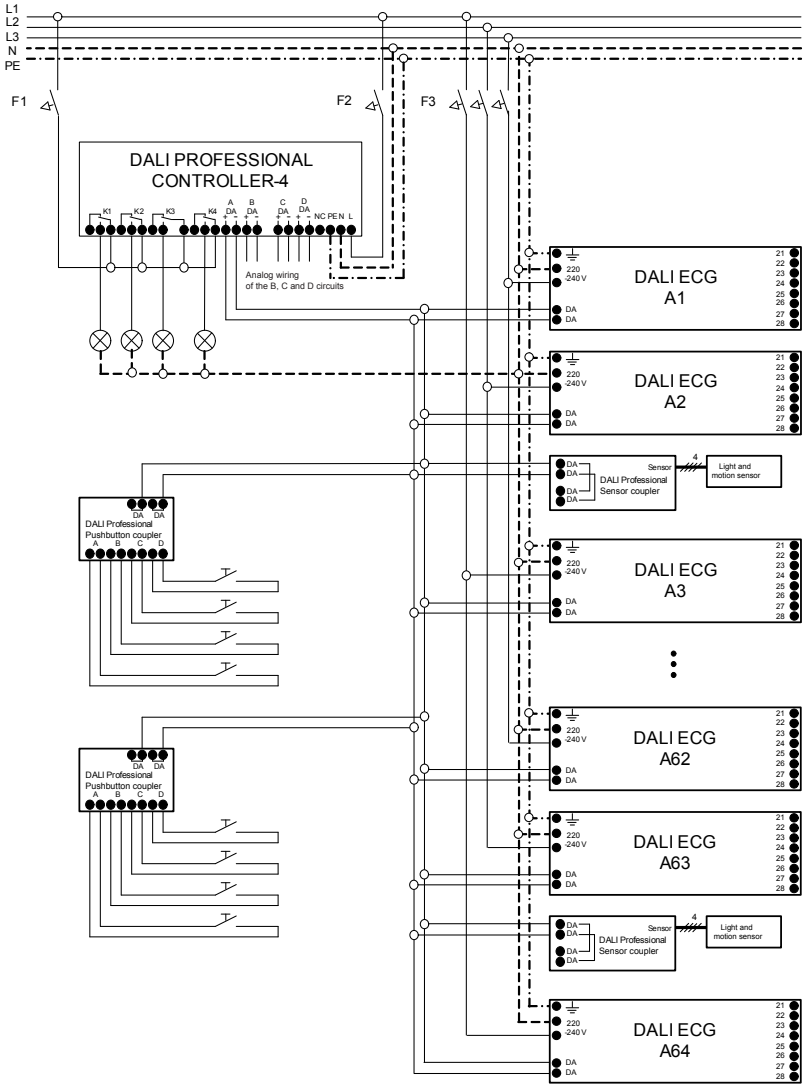
- 14 Sensor couplers
- 10 Pushbutton couplers and 2 Sensor couplers

If more couplers are required, the number of EVG in the DALI can be reduced. A maximum of 64 DALI coupler addresses are available for each DALI circuit. OSRAM DALI couplers can also be deployed across all circuits.

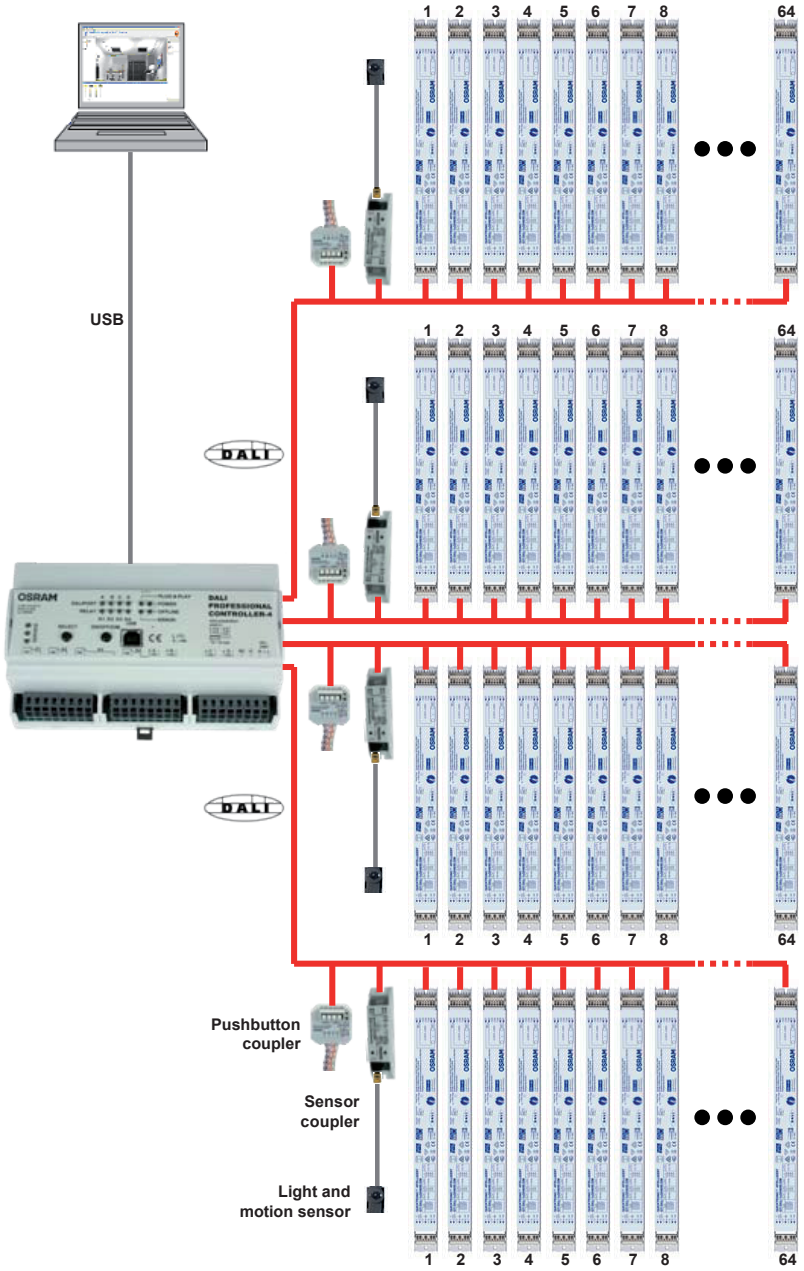
Pushbutton

Standard commercial pushbuttons can be connected to the pushbutton couplers or – via an e:bus DALI gateway – capacitive glass touch control elements and touchscreens as well. See separate operating instructions.

Connection diagram



System overview



Operation

Basic state

After initial connection to mains voltage, the control unit is in its basic state:

- Energised with mains voltage.
  → LED „POWER“ blinks for approx. 10 seconds and then lights up continuously.
- DALI power supply is active.
  → LEDs „DALIPORT“ lights up continuously.
- Relays de-energised.
  → LEDs „RELAY“ have been switched off.
- Plug & Play mode available if the control unit has not yet been configured by PC.
  → LED „PLUG & PLAY“ lights up continuously.

Construction Site mode

In the Construction Site mode the DALI circuits and relays can be energised individually by means of the „SELECT“ and „ON/OFF/DIM“ pushbuttons, and the DALI circuits can also be dimmed.

Prerequisite: mains voltage present.

Procedure (example)

Pushbutton SELECT	**Pushbutton: ON/OFF/DIM**	**State/change**
		Basic state: All four "DALIPORT" LEDs light up.
	1. Long press	A DALI broadcast RESET is transmitted. All connected EVGs and couplers are reset to their factory settings. The entire system is in a defined state.
1. Press		Only the "DALIPORT A" LEDs light up. Only the EVGs connected to DALI circuit A can be operated with ON/OFF/DIM.
	1. Short press	All EVGs connected to DALI circuit A are switched on to their maximum value.
	2. Short press	All EVGs connected to DALI circuit A are switched off.
	1. Long press	All EVGs connected to DALI circuit A are dimmed.
	2. Long press	Reversing the dimming direction. Each repeated long press of the button causes a toggle between increased brightness and decreased brightness.
2. Press		Only the "DALIPORT B" LEDs light up. Only the EVGs connected to DALI circuit B can be operated with ON/OFF/DIM.
	Analog DALI circuit A	

Pushbutton SELECT	Pushbutton: ON/OFF/DIM	State/change
3. Press		Only the "DALIPORT C" LEDs light up. Only the EVGs connected to DALI circuit C can be operated with ON/OFF/DIM.
	Analog DALI circuit A	
4. Press		Only the "DALIPORT D" LEDs light up. Only the EVGs connected to DALI circuit D can be operated with ON/OFF/DIM.
	Analog DALI circuit A	
5. Press		"RELAY K1" LED blinks rapidly. Relay K1 has been selected and is operable.
	1. Short press	Relay K1 is audibly energised and the LED blinks slower.
6. Press		"RELAY K1" lights up. Relay K1 is energised. "RELAY K2" LED blinks rapidly. Relay K2 has been selected and is operable.
7. Press		"RELAY K1" lights up. Relay K1 is energised. "RELAY K2" LED is off. Relay K2 is still de-energised. "RELAY K3" LED blinks rapidly. Relay K3 has been selected and is operable.
8. Press		"RELAY K1" lights up. Relay K1 is energised. "RELAY K2" and "RELAY K3" LEDs are off. K2 and K3 relays are still de-energised "RELAY K4" LED blinks rapidly. Relay K4 has been selected and is operable.
	1. Short press	Relay K4 is audibly energised and the LED blinks slower.
	2. Short press	Relay K4 is audibly energised and the LED blinks rapidly again.
9. Press		All four "DALIPORT" LEDs light up. The "RELAY K1" LED lights up because relay K1 is the only one in the switching state "energised".

If no operations are performed for approx. 30 seconds, the control unit returns to its basic state. Switching or dimming states are retained, however, and – in the case of the relays – are also displayed by the LEDs.

Note:
If the control unit has been configured by means of PC, the changed switching or dimming states are retained for approx. 30 seconds. Afterward, the state prior to manual operation is restored again (the activity is comparable with the restoring of voltage after a power failure).

Plug & Play mode

Simple light controls with motion detection can be set up in the Plug & Play mode by connecting DALI Professional pushbutton couplers and DALI Professional sensors.

The Plug & Play mode is only available if the control unit has not yet been configured by means of PC and the „PLUG & PLAY“ LED is lit up.

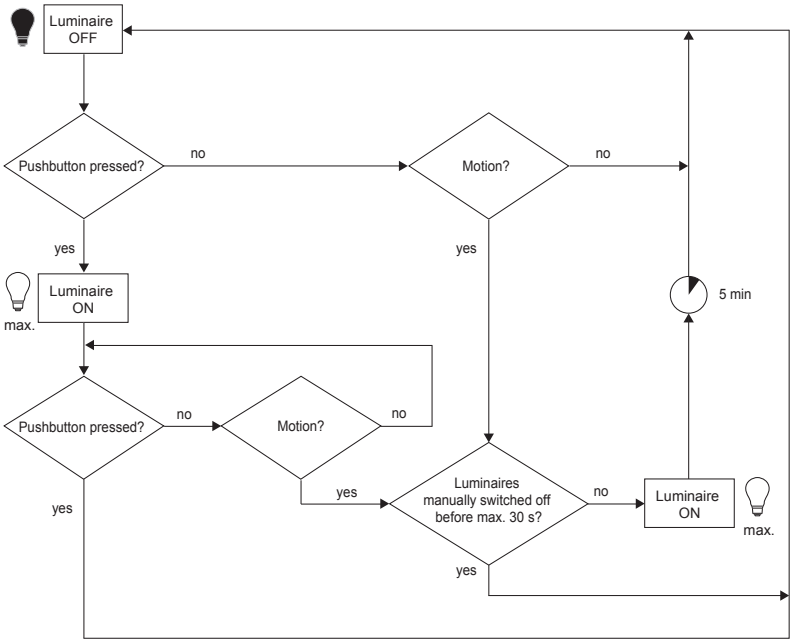
Note:

- Pushbutton and sensor switching operations only affect the DALI circuit to which the respective pushbutton coupler or sensor coupler is connected.
- Light sensors do not have a function.

Symbols

O→I	Switch on		Luminaires on		Short press (< 0.5 s)
I→O	Switch off		Luminaires off		Long press (0.5 – 4 s)
	Pushbutton on the luminaire				

Principle



Systems RESET

With the systems RESET, all connected devices can be reset to the factory default settings:

Press the „ON/OFF/DIM“ pushbutton for 10 s to carry the systems RESET.

Operation

- Switch luminaires: via short press.

- Dimming luminaires: via long press. Each repeated long press of the button causes a toggle between increased brightness and decreased brightness.

Further operating functions

Further operating functions can be configured with the DALI Professional software (see the separate software operating instructions):

- Assignment of the pushbutton functions, classified by short press, long press and „double press“.
- Free assignment of the pushbuttons and sensors to EVG groups (also across all DALI circuits).
- Setting up scheduled activity procedures.

Offline mode (power supply via the USB interface)

The control unit can be operated in the Offline mode for special applications, such as for a firmware update or the reading out of serial and version numbers, for example:

- The control unit is not supplied with mains voltage, but instead via the USB interface.
- DALI circuits are not supplied with voltage.
- The „SELECT“ and „ON/OFF/DIM“ pushbutton do not have a function.

Step	Task
1	Disconnect power supply. → "POWER" LED is switched off. → "DALIPORT" LEDs are switched off.
2	The control unit is connected with the PC via the USB interface.. → "OFFLINE" LED lights up continuously.

Behaviour after a power failure

In the Construction Site or Plug & Play mode

After voltage is restored to the control unit again with the pushbuttons, the state that existed before the power failure is restored:

- Relay states are retained.
- EVGs call up the state that existed prior to power failure („last level“).

If the EVGs are still supplied with voltage from another power supply line, these call up – consequent to the lacking DALI communication – until voltage restoration reaches the system failure level of 100% that is set at the factory.

With previous configuration by means of the DALI Professional software

After voltage is restored to the control unit again, the state that existed before the power failure is restored by means of the DALI Professional software.

Activity procedures taking place at the time of the power failure are not recontinued or restarted after voltage is restored.

Appendix

Technical data

Operating voltage	100-240 V AC/ 50-60 Hz (DC operation permissible)
Max. power consumption under full DALI load	25 W
Working temperature	0 °C … +40 °C
Protection type	IP 20
Protection class	I
Leads diameter	0.5 ... 2.5 mm² (fixed) 0.5 ... 1.5 mm² (flexible)
DALI power supply	4x 200 mA (basically insulated)
Max. number of DALI EVGs (addressed)	4 x 64
Weight	400 g
Dimensions (L x W x H)	160 x 91 x 62 mm (9 HP)

Applicable standards

DALI standard	IEC 62386
Safety	EN 60950
EMC emission	EN 55022
EMC resistance	IEC/EN 61000

CE Conformity with the relevant EU directives is confirmed by the CE symbol.

Notes

Address	Circuit	Name	Type	Comments

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III 2010
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